CFD Software for Aerospace Applications Available From the NPARC Alliance
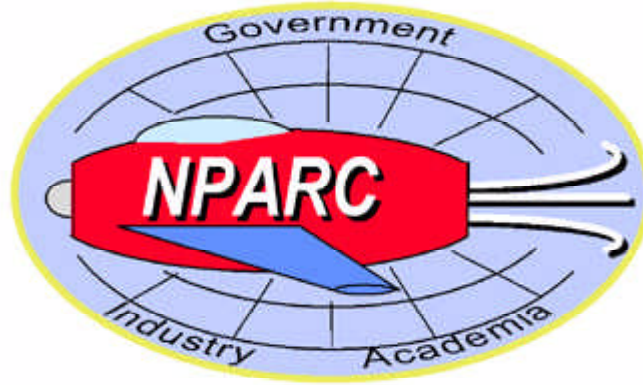
The NPARC (National Program for Application-Oriented Research in CFD) Alliance is a formal partnership between the NASA Glenn Research Center at Lewis Field and the Air Force Arnold Engineering Development Center, with additional significant involvement by the Boeing Company's Phantom Works Group, whose mission is to provide an applications-oriented computational fluid dynamics (CFD) system primarily for aerospace flow simulation. The Alliance is committed to the long-range maintenance and improvement of this capability, with teams focused on user support, code development, and validation.

The principal product of the NPARC Alliance is the WIND code, a general-purpose, structured, multizone, compressible flow solver that can be used to analyze steady or unsteady flow for a wide range of geometric configurations and over a wide range of flow conditions. WIND can be run in serial mode on a variety of platforms, including personal computers, or in a fault-tolerant parallel-processing mode on a heterogeneous network of Unix workstations. Version 2.0 of WIND was released in April 1999. In addition to the WIND code itself, a variety of preprocessing and postprocessing tools are included for setting boundary conditions, examining computed results, and other functions.

The Alliance maintains extensive World Wide Web sites that contain code documentation and validation data. The documentation includes user manuals that describe the operation and use of the WIND code and its associated utilities, and developer reference material for those who are interested in modifying or extending the code. The validation site contains detailed examples showing the use of WIND for a variety of flows and geometries. It serves as an archive of analytical, experimental, and computational data suitable for CFD code validation.

The NPARC Alliance is continuing to expand and improve the software, with current efforts focused on enhancing WIND's chemistry capability, adding unstructured and hybrid grid technology, and developing a global code framework for multidisciplinary analyses.

All NPARC Alliance software is available without charge to U.S.-owned companies, public and private universities, and government agencies (for use by U.S. citizens and resident aliens). Instructions for obtaining the code may be obtained from the NPARC Alliance home page, or from the NPARC Alliance User Support team. Since its initial release in February 1998, the WIND code has been acquired by over 130 different organizations.

The NPARC Alliance, a partnership between NASA Glenn and the Arnold Engineering Development Center, is dedicated to the establishment of a national, application-oriented computational fluid dynamics system for aerospace flow simulation.

Additional information is available about the NPARC Alliance http://www.arnold.af.mil/nparc/

and the WIND code documentation http://www.grc.nasa.gov/WWW/winddocs/

and validation http://www.grc.nasa.gov/WWW/wind/valid/.

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Special recognition: An Honorable Mention was awarded to the NPARC Alliance Flowfield Simulation System in the 1999 NASA Software of the Year Competition.